small, and no lives were lost, though there were some very narrow escapes and one person was injured. The value of the property destroyed, which includes chiefly farmhouses, barns, live stock, and crops already housed, was about $15,000.

The third storm formed about 10 p. m. a few miles southwest of Zyba (4 miles south of Pock, Sumner County) and moved northeastward, causing the death of 3 persons at Zyba and 1 at Derby, 10 miles to the northeast. Twenty-eight persons were injured by this storm, which also destroyed property to the estimated value of $50,000. Its path was 16 miles long, about one-eighth mile wide, and sharply defined. The funnel-shaped cloud was not seen on account of the darkness.

## TORNADO AT PACE, FLA., NOVEMBER 26, 1915.

William F. Reed, jr., local forecaster at Pensacola, Fla., reports that a tornado occurred at Pace, Fla. ($\phi = 30°\ 35'$ N.; $\lambda = 87°\ 14'$ W.) on November 26, 1915. Moderate to fresh southerly gales occurred at Pensacola between 8 p. m. November 25 and 8 a. m. of the 26th, the highest 5-minute rate being 48 miles per hour from the southwest at 7:05 a. m. on the 26th and the extreme rate 55 miles from the southwest at 7.01 a. m. On the morning of November 26 thunderstorms were occurring in the southern end of a low-pressure trough over the Mississippi Valley. At Pensacola portions of a rainbow had been observed in the west and northwest at 6:45 a. m.; at 6:55 a. m. threatening conditions were rapidly approaching; rain began at 7:02 a. m. This rain ended at 10:30 a. m., having amounted to 0.38 inch, of which 0.32 fell between 7 and 8 a. m. Faint peals of thunder were heard from 7:14 to 9:20 a. m.; lightning was observed from 7:18 to 8:20 a. m. No damage was done at Pensacola.

After reaching Pensacola the storm moved north-northeastward, doing the greatest damage at Pace, Fla. While on its way the storm appeared at Floridatown on Escambia Bay as a straight blow from the south-southwest, lasting only a few minutes and doing no damage.

The tornado seems to have reached Pace at 8 a. m. as a black funnel-shaped cloud coming from the southwest and moving toward the northeast. A distinct whirl was observed in the cloud which rose and fell at short intervals and was accompanied by "a roaring noise like 50 freight trains," and one person reports that the noise was mostly above the tree tops. There was some lightning and heavy rainfall for 20 minutes. The general direction in which trees and débris lay was from southwest to northeast; the length of the path at this place was 3 miles, with a width of one-fourth mile where the greatest destruction occurred. Another observer, whose house was moved 6 inches and whose sheds were carried 100 yards, found the path to be about 100 yards wide. No one was killed.

## WEATHER CONDITIONS OVER THE NORTH ATLANTIC DURING NOVEMBER, 1914.

The data presented are for November, 1914, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. The accompanying Chart IX (XLIII–131) shows for November, 1914, the averages of pressure, temperature, and the prevailing direction of the winds at Greenwich mean noon, together with the location and courses of the more severe storm tracks of the month.

During the month as a whole the distribution of the mean atmospheric pressure over the greater part of the ocean was similar to the normal, as shown on the Meteorological Chart of the North Atlantic Ocean for November. The Azores high was of less area and of slightly greater intensity than normal, while its crest was about 6° west of its usual position.

The center of the Icelandic low was too far north to be shown on the chart, but judging from the nearly normal location of the 29.70 isobar, it is probably not far from its normal position. Over the northern-central part of the ocean there were more than the average number of gales reported, although in many instances it was impossible to show the movement of the storm from day to day on account of lack of observations.

On Chart III (XLII–78), showing the tracks of low areas for November, 1914, published in the REVIEW for that month, a low (I on Chart IX) is shown that first appeared on November 1, over the Pacific Ocean off the coast of Vancouver Island. This moved in an easterly direction through southern Canada, and on the morning of the 5th was on the Atlantic coast near Chatham, Canada. On November 6, 1914, the apparent center was near latitude 51° N. and longitude 46° W., several vessels to the eastward reporting winds of from 40 to 48 miles an hour, with rain, while in the central and southern portions of the area moderate winds and fog prevailed. On November 7 it had moved northeastward and was central near latitude 59° N. and longitude 26° W., the wind having decreased in force. By the 8th the storm had moved beyond the limits of the chart.

A second low (II on Chart IX) appeared in Alberta near latitude 51° and longitude 115° on the morning of November 11. This moved in a southeasterly direction and passed over Chicago on the night of the 12th; thence curving slightly to the northward it reached the Canadian coast near Chatham on the morning of the 14th, moderate winds of from 36 to 40 miles prevailing. On November 15 it was central near latitude 49° and longitude 45°, the barometer having fallen slightly and the winds increased to a maximum of 48 miles. On the 16th it had moved to latitude 51° and longitude 36°, where one vessel reported a barometer reading of 29.05 inches and several encountered winds of 64 miles an hour, accompanied by hail and rain. No trace of this storm could be seen on the 17th, and it had evidently moved in a northerly direction off the limits of the chart.

On November 20 a low with a minimum barometer reading of 29.41 inches was central off the Atlantic coast near Boston, while there was a high area with a maximum reading of 30.84 inches near latitude 47° N. and longitude 46° W. The unusually steep gradient of 1.43 inches between these two areas was accompanied by heavy winds, and a number of vessels reported westerly and southwesterly gales of 64 miles an hour. By the 21st the low had moved a short distance to the north and the high about 10° to the east. The distance between the two lows had increased, the gradient was weaker and the force of the wind was less in the intermediate region, the highest velocity recorded being 48 miles an hour.

On November 25 a low appeared with its apparent center near latitude 59° and longitude 32°, although it was too far north to plot accurately. Between the forty-fifth and fifty-fifth parallels and thirty-fifth and forty-fifth meridians several ships reported westerly and southwesterly gales, with snow and hail, one vessel encountering a wind of 75 miles an hour, which was the highest velocity reported during the month. From the 27th to the 30th there was a succession of westerly gales along the fiftieth parallel, although the centers of the low areas from which they originated were all too far north to appear on the chart.

*Fog.*—The Meteorological Chart of the North Atlantic Ocean for November shows that the maximum amount of fog for the 6-year period from 1901 to 1906 occurred in the vicinity of the banks of Newfoundland, where the percentage was from 30 to 35. For November, 1914, in the 5-degree square from latitude 45° to 50° and longitude 45° to 50° fog was observed on six days, or a percentage of 20, while it was also below the normal on all other portions of the ocean.

*Temperature.*—As a whole the temperature was not far from the normal, although off the coast of Scotland and in mid-ocean between the thirty-fifth and fortieth parallels there were positive departures of from 2° to 4°, while in the waters adjacent to the American coast they ranged from +1° at the fiftieth parallel to −1° off the southern coast of Florida and from +2° to +4° in the Gulf of Mexico. The departures at the different land stations on the Atlantic coast were as follows: St. Johns, Newfoundland, +0.1°; Sydney, Cape Breton Island, +0.9°; Halifax, Nova Scotia, −0.7°; Portland, Me., −1.0°; Boston, +1.5°; New York, 0.0°; Atlantic City, +0.5°; Norfolk, −0.2°; Hatteras, −1.1°; Jacksonville, −0.2°; Key West, −1.3°; Tampa, +0.8°; New Orleans, +0.6°; Galveston, +0.2°; and Corpus Christi, +1.6°.

### PRECIPITATION.

On the northern steamship routes hail occurred on the 11th, 12th, 13th, 14th, 15th, 17th, 25th, 26th, 27th, 28th, and 30th, and snow on the 13th, 20th, 24th, 25th, 28th, 29th, and 30th.

*Maximum wind velocities, November, 1915.*

| Station. | Date. | Velocity. | Direction. | Station. | Date. | Velocity. | Direction. |
|---|---|---|---|---|---|---|---|
| | | *Mis./hr* | | | | *Mis./hr.* | |
| Block Island, R. I. | 15 | 56 | w. | Mt. Tamalpais, Cal. | 16 | 58 | nw. |
| Do | 16 | 52 | w. | Do | 23 | 51 | sw. |
| Do | 19 | 50 | se. | Do | 26 | 62 | n. |
| Do | 21 | 50 | w. | Nantucket, Mass. | 5 | 50 | ne. |
| Buffalo, N. Y. | 1 | 54 | w. | New York, N. Y. | 2 | 60 | w. |
| Do | 2 | 50 | nw. | Do | 9 | 57 | nw. |
| Do | 12 | 50 | w. | Do | 15 | 61 | nw. |
| Do | 13 | 58 | w. | Do | 19 | 71 | se. |
| Do | 15 | 52 | w. | Do | 20 | 51 | sw |
| Do | 19 | 56 | sw. | Do | 21 | 56 | w. |
| Do | 20 | 74 | w. | North Head, Wash. | 15 | 82 | s. |
| Do | 21 | 52 | w. | Do | 17 | 66 | s. |
| Do | 27 | 56 | w. | Do | 21 | 60 | se. |
| Do | 29 | 70 | w. | Do | 22 | 72 | se. |
| Charleston, S. C. | 18 | 54 | se. | Do | 24 | 67 | se. |
| Chattanooga, Tenn | 20 | 55 | sw. | Do | 25 | 62 | sw. |
| Cheyenne, Wyo. | 7 | 52 | nw. | Do | 28 | 52 | s. |
| Do | 18 | 54 | w. | Pittsburgh, Pa. | 21 | 50 | w. |
| Do | 19 | 54 | w. | Point Reyes Light, Cal. | 6 | 64 | nw. |
| Do | 20 | 64 | w. | Do | 7 | 60 | nw. |
| Do | 21 | 50 | w. | Do | 8 | 56 | s. |
| Do | 22 | 72 | w. | Providence, R. I. | 2 | 58 | nw. |
| Do | 25 | 50 | w. | Do | 16 | 54 | nw. |
| Do | 26 | 54 | w. | Do | 19 | 62 | se. |
| Columbia, S. C. | 18 | 52 | sw. | Reno, Nev. | 15 | 52 | w. |
| Del Rio, Tex. | 25 | 50 | nw. | Do | 23 | 55 | w. |
| Drexel, Nebr. | 10 | 54 | sw. | Roswell, N. Mex. | 10 | 50 | sw. |
| Duluth, Minn. | 8 | 51 | sw. | St. Paul, Minn. | 7 | 54 | w. |
| Do | 19 | 56 | nw. | Sandy Hook, N. J. | 2 | 53 | w. |
| El Paso, Tex. | 10 | 51 | w. | Do | 15 | 54 | w. |
| Erie, Pa. | 18 | 60 | se. | Do | 19 | 60 | se. |
| Do | 19 | 71 | se. | Savannah, Ga. | 18 | 62 | se. |
| Do | 20 | 52 | w. | Soult Ste. Marie, Mich. | 9 | 52 | nw. |
| Do | 21 | 50 | sw. | Sioux City, Iowa. | 22 | 55 | nw. |
| Galveston, Tex. | 17 | 50 | nw. | Tatoosh Island, Wash. | 15 | 54 | nw. |
| Grand Haven, Mich. | 19 | 57 | w. | Do | 17 | 64 | se. |
| Do | 20 | 50 | w. | Do | 21 | 56 | w. |
| Green Bay, Wis. | 1 | 50 | w. | Do | 22 | 54 | s. |
| Do | 11 | 52 | s. | Do | 24 | 52 | e. |
| Hatteras, N. C. | 18 | 50 | s. | Do | 25 | 74 | sw. |
| Do | 19 | 55 | se. | Toledo, Ohio | 11 | 50 | s. |
| Lexington, Ky. | 19 | 50 | sw. | Trenton, N. J. | 19 | 54 | se. |
| Louisville, Ky. | 19 | 52 | sw. | Wichita, Kans. | 10 | 54 | sw. |
| Mt. Tamalpais, Cal. | 7 | 52 | nw. | | | | |
| Do | 8 | 58 | sw. | | | | |
| Do | 12 | 53 | n. | | | | |